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(54) Depilation device

(57) A depilation device includes a laser beam generator (15) embodied in a hand gun (20) with a trigger (19) enabling pulses of laser energy to be delivered along a flexible fibre optic probe (13) which has a bore in the end which can fit over a hair to be destroyed. At the end of the bore the optic is formed as a convex lens so that the pulses of energy are focused into the hair so that the hair and follicle can be destroyed without destroying surrounding tissue.

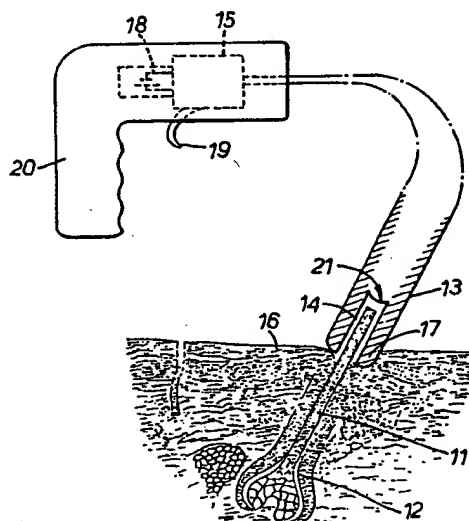


Fig. 1.

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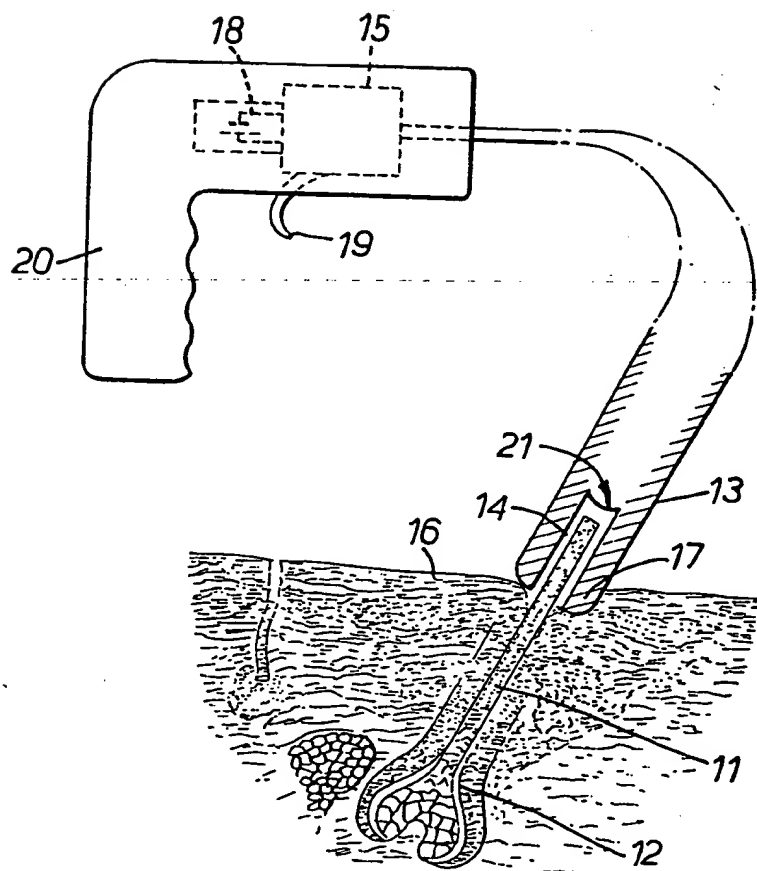


FIG. 1.

## SPECIFICATION

## Depilation device

- 5 This invention relates to a depilation device and one object is to provide such a device which enables the user quite easily and safely to destroy unwanted hairs without requiring expensive apparatus.

According to the present invention, a depilation  
10 device comprises a fibre optic probe with a bore at its tip to accommodate a hair; there is preferably a lens within the bore to focus energy in the probe into the hair.

By applying the tip of the probe over the hair a  
15 path is established for laser beam - or possibly other-energy to be applied as a pulse to the root of the hair or follicle thus preventing regrowth.

The bore may extend from the tip of the probe for a distance equal to the length of a cut-off hair, of  
20 perhaps two to three millimetres, and then the lens may be formed as a convex-ended closure to the bore so that it acts as a lens to focus the energy thus restricting the energy to flow within the hair to its follicle so as not to cause damage to surrounding  
25 tissues.

As human and mammalian hairs vary in thickness considerably, a selection of detachable probes will be necessary with different convergent lenses offering a range of focal lengths to accommodate the  
30 variation in depth of hair follicles. The external diameter of a probe could be 3 mm and internal diameters could range from 0.3 mm to 1 mm.

The invention includes the fibre optic probe connected to the output from a laser beam generator  
35 which is connected to a pulse forming circuit and a trigger with which to fire when the probe is in position and the hair is to be destroyed. Those components can conveniently be mounted in a hand gun equipped with a battery of commonly available  
40 type, to act as a power source for the laser beam generator.

This device has application in human dermatological therapy (including treatment of naevos and related conditions) cosmetic therapy and as veterinary  
45 treatments.

The invention may be carried into practice as illustrated in *Figure 1*.

In *Figure 1*, the hair 11 and its follicle 12 are to be destroyed and for that purpose a fibre optic probe 13  
50 is used. It has a central longitudinal bore 14 at its tip, about 2 to 3 mm long, of 0.5 mm - 1 mm internal diameter and approximately 3 mm external diameter.

A convex lens 21 is defined at the end of the bore.

At one end the probe 13 is connected to the  
55 discharge of a laser beam generator 15 so that light from the laser beam is conducted along the coaxial glass body of the probe to the lens 21. It is focused into the end of the hair and is conducted along the hair to the follicle where the energy is dissipated  
60 resulting in destruction of the follicle without damage to surrounding tissues.

The generator 15 is powered by a battery cell 18 connected through a pulse forming circuit to the laser beam generator 15 and when the trigger 19 is  
65 pressed a pulse of radiation is generated and

transmitted along the probe to be focused into the hair and its follicle in order to destroy them.

The components are conveniently housed in a pistol like body 20 housing the trigger 19.

- 70 It is anticipated that the energy necessary to destroy a hair (or a naevus or related dermatological conditions) might be approximately one joule so that a small battery can be effective for destroying a large number of hairs etc. The user merely applies the end  
75 of the probe to the hair (or the naevus etc) to be removed, and presses the trigger.

## CLAIMS

- 80 1. A depilation device comprising a fibre optic probe with a bore at its tip to accommodate a hair.  
2. A depilation device as claimed in Claim 1 including a lens within the bore to focus energy in the probe into the hair.  
85 3. A device as claimed in Claim 2 in which the lens is a convex lens formed at the end of the bore.  
4. A device as claimed in any of the preceding claims in which the bore extends from the tip of the probe for a distance of 2-3 mm.  
90 5. A device as claimed in any of the preceding claims in which the diameter of the bore is between 0.3 and 1 mm.  
6. A device as claimed in any of the preceding claims in which the external diameter of the probe is  
95 about 3 mm.  
7. A depilation device as claimed in any of the preceding claims in which the fibre optic probe is connected to the output from an energy generator connected to an energy pulse forming circuit and  
100 having a trigger with which the circuit can be fired.  
8. A depilation device as claimed in any of the preceding claims embodied in a hand gun.  
9. A depilation device constructed and arranged substantially as herein specifically described with  
105 reference to the accompanying drawing.  
10. A method of destroying an unwanted hair by applying a pulse of energy into the end of the hair and hence into the hair follicle.